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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicants: Daniel J. Sherlock et al.

Title: SYSTEM AND METHOD FOR TEST DATA REPORTING USING A STATUS SIGNAL

Appl. No.: 09/670,971

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Examiner: Hau H. Nguyen

Art Unit: 2676

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APPELLANT'S BRIEF UNDER 37 C.F.R. 1.192

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Sir:

The following is the Appellant's Brief, submitted under the provisions of 37 C.F.R. 1.192. The fee of $340 (large entity) required by 37 C.F.R. 1.17(c) and one month extension fee of $110 is instructed to be charged against a deposit account number on the accompanying transmittal herewith.

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1. Real Party in Interest

The real party in interest is the assignee of record, Rockwell Collins, Inc.

2. Related Appeals and Interferences

There are no related appeals or interferences that will directly affect, be directly affected by, or have a bearing on the present appeal, that are known to Appellant or Appellant's patent representative.

3. Status of Claims

The present appeal is directed to Claims 1-6, 8-10, 13-23, 25 and 26, i.e., all of the presently pending claims that stand rejected in this application. Please note that Claims 7, 11, 12 and 24 are allowed, and thus those claims are not on appeal.

4. Status of Amendments

Claims 1-26 were originally pending in the application. In response to a first substantive Office Action dated March 16, 2003, Appellant amended Claims 6 and 19. In response to a second, final non-Office Action dated June 23, 2003, Appellant amended Claims 1, 6, 7, 10, 11, 16, 17, 19, 23 and 24. In response to a third non-final Office Action dated December 3, 2003, Claim 14 was amended. In response to the fourth final Office Action, dated May 14, 2004, no claims were amended.

5. Summary of the Invention

The present invention relates to a system that superimposes data on a static status signal. See, present application, page 10, lines 6-8. The static status signal has a first fixed level and a second fixed level that indicates an operational condition of the system or a component of the system.

The specification of the present application defines a static status signal as a signal:

> that continually indicates the status of a parameter. An example of a "static" status signal is the "on indicator" signal on pin 8 of an AIRINC 722 connector. Pin 8 of an AIRINC 722 connector provides a nominal 28-volt "on indicator" signal indicating that the display unit 211 is operating. When the unit is not operating, pin 8 of an AIRINC 722 connector provides a nominal 0-volt signal indication that the display unit 211 is off. The "on indicator" signal on pin 8 may be examined at any time to determine the current operating status of the display.

See, present application, page 14, lines 5-12. Additional data associated with the system can thus be superimposed on the static status signal, such as the "on indicator" signal, according to principles of the present invention. See, present application, page 24, lines 18-20.

The superimposed data is particularly useful to assist in troubleshooting and testing of the system. See present application, page 6, lines 13-18. By superimposing the additional data on a static status signal, new troubleshooting and testing techniques can be utilized on existing systems. The use of the static status signal to superimpose data also allows existing connectors and wiring to be utilized without the need to install additional communication lines. These are significant advantages when employed in legacy or existing systems, such as aircraft display networks. See, present application, page 5, lines 8-11.

In one embodiment, data is superimposed on the "on-indicator" static status signal without degrading performance of the display unit or interfering with performance of legacy systems. See, present application, page 6, lines 3-13. With reference to Figure 2A, the system is embodied in an aircraft display network including display units 101, a system control unit 201, a tapping unit 203 and AIRINC 722 connector 205.

The additional data can be superimposed via a variety of different techniques. See, present application, page 18, lines 1-2, page 39, lines 5-14, and page 40, lines 3-5. Such data can be reported by transmitting it superimposed on the 28-volt "on indicator" for such occurrences as power on self test, failure of the unit, changes in the status of the unit, or a variety of other circumstances. Exemplary data that can be superimposed is shown in Figure 6. By superimposing the data on the existing 28-volt "on indicator" line, legacy systems can use

existing wiring and connections. None of the display unit 211, cabling associated therewith, and the connector of display unit 211 must be changed to accommodate the additional data. Violation of the AIRINC 722 standard is also not required to communicate the additional data. See, present application, page 18, lines 12-14. These are significant advantages particular to the field of aircraft systems.

Independent Claim 1 relates to an apparatus for providing data superimposed on a static signal. The apparatus includes an electronic system, (according to one embodiment, a display unit 101 (Figure 2A)). The electronic system is capable of providing superimposed data on the static status signal, (according to one embodiment, the signal on pin 8 of an ARINC 722 connector). See, present application, page 17, lines 9-18, Figures 3 and 4.

The apparatus also includes a modulating circuit connected to the electronic system for receiving the data (according to one embodiment a recovery circuit (e.g., comparator 503, optocoupler, etc.)). See, present application, page 18, line 15 to page 19, line 19. The modulating circuit can also be embodied as a microprocessor or other decoder circuit.

Independent Claim 6 recites similar subject matter to Independent Claim 1 and specifically recites additional limitations related to the static signal. Independent Claim 6 recites that the static signal is a 28 Volt Direct Current (VDC) logic signal, wherein "the 28 VDC logic signal is the 'on indicator' signal on pin 8 of an ARINC 722 connector." See, present application, p. 18, lines 5-8.

Independent Claim 10 recites a method of collecting data from an electronic system by superimposing data upon a static signal. See, present application, page 25, line 1-2. The method includes steps of aggregating the data from the electronic system (according to one embodiment, a display unit 101 (Figure 2A)). The method also includes steps of modulating the static signal according to the aggregated data to produce a varying signal superimposed on the static signal (according to one embodiment, the signal on pin 8 of an AIRINC 722 connector). See, present application, page 17, lines 18-19, Figures 3 and 4. The method also includes coupling the varying data signal to a receiving circuit (according to one embodiment, a comparator 103, an

optocoupler in Figure 5B, a microprocessor, or other decoder circuit). See, present application, page 18, line 15 – page 19, line 19. The method includes a final step of recovering the varying data signal in the receiving circuit to obtain the aggregated data. Figure 8 illustrates an exemplary status reporting circuit 600 that aggregates data.

Independent Claim 16 recites a method similar to Independent Claim 10. Claim 16 recites the additional limitation of "coupling the varying data static signal into a 28 volt 'on-indicator' on pin 8 of an AIRINC 722 connector of a commercial airline in-flight-entertainment display unit." Independent Claim 17 recites a method similar to Claim 16 and is patentable for the same reasons as Claim 16.

Independent Claim 19 recites an electronic system similar to Claim 1 and additionally recites that the data is indicative of information other than an operational condition. The data can be related to other factors than the operational condition associated with static status signal.

Independent Claim 23 is similar to Independent Claim 1 and recites an additional limitation wherein the electronic system includes a commercial airline in-flight entertainment system and the first electronic subsystem is a system display unit 101.

Independent Claim 25 recites the status monitoring system for a display in an inside entertainment system in an aircraft comprising a display unit 101, a system control unit 201, a tapping unit 211 and a status reporting circuit 601. The status signal is a static display on-indicator. Independent Claim 26 is similar to independent Claim 25 and additionally recites a plurality of tapping units, a plurality display units 101 and a plurality reporting circuit 601.

6. Concise Statement Listing Each Ground of Rejection For Review

The issues on appeal are whether the Examiner erred in rejecting Claims 1-2, 8-10 and 19 under 35 U.S.C. § 102(a) as being unpatentable over (Sakuyama) U.S. Patent No. 5,729,373; whether the Examiner erred in rejecting claims 3-5, 13-15, 18, and 20-22 under 35 U.S.C. § 103(a) as being unpatentable over Sakuyama in view of admitted prior art (APA); and whether

the Examiner erred in rejecting Claims 6, 6-17, 23 and 25-26 under 35 U.S.C. § 103 as being unpatentable over APA in view of Sakuyama.

7. Argument

I. Legal Standards

A. Standards Under 35 U.S.C. § 102(a).

Claims 1-2, 8-10, and 19 have been rejected under 35 U.S.C. § 102(a), which states:

> A person shall be entitled to a patent unless (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent.

Under Section 102, a claim is anticipated, i.e., rendered not novel, when a prior art reference discloses every limitation of the claim. In re Schreiber, 128 F.3rd 1473, 1477 (Fed. Cir. 1997). Although a prior art device "may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so." In re Mills, 916 F.2d 680, 682 (Fed. Cir. 1990). "Rejections under 35 U.S.C. § 102(a) are proper only when the claimed subject matter is identically disclosed or described in the prior art." In re Arkley, Eardley, and Long, 172 U.S.P.Q. 524, 526 (CCPA 1972).

Claim terms will be given their ordinary and accustomed meaning, unless there is "an express intent to impart a novel meaning to [the] claim [term]" by the patentee. York Prods., Inc. v. Cent. Tractor Farm & Family Ctr., 99 F.3d 1568, 1572 (Fed. Cir. 1996); Sage Prods. v. Devon Indus., Inc., 126 F.3d 1420, 1423 (Fed. Cir. 1997). The ordinary and accustomed meaning of a claim term is determined by reference to dictionaries, encyclopedias, and treatises available at the time of the patent. See Texas Digital Systems, Inc., 308 F.3d at 1203. Such references are always available for claim construction purposes and are neither extrinsic nor intrinsic evidence. See Texas Digital Systems, Inc. v. Telegenix, Inc., 308 F.3d 1193, 1202-03 (Fed. Cir. 2002).

In order to impart a specific meaning to a claim term, i.e., for the inventor to be her own lexicographer, such lexicography must appear "with reasonable clarity, deliberateness, and precision." In re Paulsen, 30 F.3d 1475, 1480 (Fed. Cir. 1994). However, intrinsic evidence may be consulted to determine the definite meaning of a claim term that is unclear. CCS Fitness, Inc. v. Brunswick Corp., 288 F.3d 1359, 1367 (Fed. Cir. 2002). A claim term may be redefined without any express statement of redefinition in the specification. Bell Atl. Network Servs., Inc. v. Covad Communications Group, Inc., 262 F.3d 1258, 1268 (Fed. Cir. 2001). "[A] claim term will not carry its ordinary meaning if the intrinsic evidence shows that the patentee distinguished that term from prior art on the basis of a particular embodiment" or "described a particular embodiment as important to the invention."

B. Standards Under 35 U.S.C. § 103(a).

Claims 3-6, 13-18, 20-23, and 25-26 have been rejected under 35 U.S.C. § 103(a), which states:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The legal standards under 35 U.S.C. § 103(a) are well-settled. Obviousness under 35 U.S.C. § 103(a) involves four factual inquires: 1) the scope and content of the prior art; 2) the differences between the claims and the prior art; 3) the level of ordinary skill in the pertinent art; and 4) secondary considerations, if any, of nonobviousness. See Graham v. John Deere Co., 383 U.S. 1, 148 U.S.P.Q. 459 (1966).

In proceedings before the Patent and Trademark Office, the Examiner bears the burden of establishing a prima facie case of obviousness based upon the prior art. In re Piasecki, 745 F.2d 1468, 1471-72, 223 U.S.P.Q. 785, 787-88 (Fed. Cir. 1984). "'[The Examiner] can satisfy this

burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references."' In re Fritch, 972 F.2d 1260, 1265, 23 U.S.P.Q.2d 1780, 1783 (Fed. Cir. 1992).

As noted by the Federal Circuit, the "factual inquiry whether to combine references must be thorough and searching." McGinley v. Franklin Sports, Inc., 262 F.3d 1339, 60 U.S.P.Q. 2d 1001 (Fed. Cir. 2001). Further, it "must be based on objective evidence of record." In re Lee, 277 F.3d 1338, 61 U.S.P.Q. 2d 1430 (Fed. Cir. 2002). The teaching or suggestion to make the claimed combination must be found in the prior art, and not in the applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 U.S.P.Q. 2d 1438 (Fed. Cir. 1991). The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. In re Mills, 916 F.2d 680, 16 U.S.P.Q. .2d 1430 (Fed. Cir. 1990). "It is improper, in determining whether a person of ordinary skill would have been led to this combination of references, simply to '[use] that which the inventor taught against its teacher.'" Lee (citing W.L. Gore v. Garlock, Inc., 721 F.2d 1540, 1553, 220 U.S.P.Q. 303, 312-13 (Fed. Cir. 1983)). Teaching away from the claimed invention is a strong indication of non-obviousness and an improper combination of references. U.S. v. Adams, 383 U.S. 39 (1966).

II. The Examiner's rejection of Claims 1-2, 8-10, and 19 under 35 U.S.C. § 102(a) as being unpatentable over U.S. Patent No. 5,729,373 (Sakuyama) should be reversed because Sakuyama does not teach at least one limitation of each of the claims.

The claimed invention is not anticipated under Section 102 unless each and every element of the claimed invention is found in the prior art. Hydratech, Inc. v. Monochronal Antibodies, Inc. (Fed. Cir. 1986) Accordingly, the rejection of these claims under 35 U.S.C. § 102(a) is improper and should be reversed.

A. Claim 1 is patentable over Sakuyama because Sakuyama does not disclose a static status signal that carries additional superimposed data.

In the Final Office Action, the Examiner states that Sakuyama teaches superimposing data on a static status signal. The Examiner relies on Figure 5B and states:

> Applicants' arguments did not show how the static signal of reference Sakuyama is different from that of the application.

See, Final Office Action, page 2. Appellant respectfully disagrees with the Examiner's position that Sakuyama discloses a static status signal upon which data is superimposed.

Claim 1 clearly recites superimposing of data on a static status signal. A static status signal is defined as a signal having a fixed level and a fixed second level for indicating status.

Appellant agrees with the Examiner that Sakuyama discloses a circuit that reproduces a monitor signal. However, the monitor signal takes many forms as it is transmitted from photodiode 106 to monitor control circuit 117. See, Figure 3 of Sakuyama. Only one form of the monitor signal can be considered a static status signal – that form of the monitor signal is the binary signal produced by discriminator 115. See, Sakuyama, col. 4, lines 14-18, Figure 5D and col. 2, line 67- col. 3, line 1. Nonetheless, the form of the monitor signal produced by discriminator 115 cannot be a static status signal as that term is recited in Claim 1 because data is not superimposed upon it. All other forms of the monitor signal are not static status signals.

Although the monitor signal at one distinct point (the output of discriminator 115) is described as having levels of zero and one, the Examiner has mistakenly asserted that the monitor signal is a fixed signal wherever it is along the path of Figure 3. This is simply not the case.

The monitor signal begins as a monitor optical signal 105 that is converted into a monitor electrical signal having an amplitude in accordance with the intensity of the monitor optical signal. See, Sakuyama, col. 2, lines 44-46. Clearly, the monitor electric signal is not a static status signal.

The monitor electrical signal is preamplified by preamplifier 107. The output of preamplifier 107 is not a two level signal, and its frequency component is extracted by band pass filter 108. The frequency component is referred to as the monitor signal component. See, Sakuyama, col. 2, lines 48-51.

The signal provided by filter 108 is also not a fixed voltage level status signal. See, Sakuyama, col. 3, lines 64-66. Appellant notes that the main signal is removed by filter 108, thereby completely eliminating the possibility of providing data across elements 197, 108, 109, 111 and 115. Filtering out the main signal is a direct contradiction to the very principles of the present invention.

The output of filter 108 is amplified by main amplifier 109. This amplified signal also is not a fixed voltage level status signal. Envelope detector 111 serves to remove small variations of the monitor signal component. See, Sakuyama, col. 2, lines 53-54. This signal is also not a static status signal. The output of discriminator 115 is a binary signal that is provided to monitor control circuit 117. Therefore, the only form of the monitor signal that can be considered the static status signal is the binary signal from discriminator 115.

Elements 106, 108, 109, 111, and 115 of Sakuyama merely serve to convert a signal representing the intensity of the optical signal into a binary signal. Indeed, the main signal is even removed by band pass filter 108, thereby preventing any data from the main signal from reaching the monitor control circuit 117. See, Sakuyama, col. 3, lines 64-66. As can be seen in Figure 5B of Sakuyama, no additional data is provided. Sakuyama even states:

> Therefore, when the value of the monitor signal is "zero", the signal wave form 23, shown in 5B has a constant voltage, whereas, when the value of monitor signal is "1" the signal wave form 24, in which the carrier signal superimposed on the constant voltage is obtained.

See, Sakuyama, col. 3, lines 66- col. 4, line 4. Therefore, the only data that is being received is the monitor signal itself.

As discussed above, Sakuyama discloses a monitor signal. However, only one form of that monitor signal, the output of discriminator 115, could possibly be considered a static status signal. Accordingly, to meet the claim limitations of independent claim 1, somewhere after the output of discriminator 115, data would have to be superimposed upon that signal.

Sakuyama simply does not disclose superimposing data on the binary levels of the monitor signal after discriminator 115. The final output of discriminator 115 is provided as a logic one and zero without any superimposed data. See, Sakuyama, Figure 5D. See, Sakuyama, Figure 3. Indeed, even the main signal is removed by band pass filter 108 before discriminator 115. Therefore, the Examiner's conclusion that the monitor signal is a static status signal having superimposed data is simply incorrect. Sakuyama does not disclose a static status signal having data superimposed on it because none of the forms of the monitor signal are both static status signals and include superimposed data.

In addition, Sakuyama does not teach superimposition of data on the monitor signal. The purpose of this monitor signal of Sakuyama is not to provide additional data on the monitor signal, but rather to remove signal components to provide a better threshold conversion for the monitor signal. Merely converting the same data associated with the monitor signal is not the same as superimposing data on a static status signal. The monitor signal is only a derivation upon itself and additional data is simply not provided along the path through elements 107, 108, 109, 111, and 115. Band pass filter 108 even removes data from the main signal if any were injected. Accordingly, Sakuyama does not disclose a static status signal having data superimposed on it because Sakuyama removes data from the monitor signal rather than injecting data on to it.

In conclusion, Sakuyama is fundamentally different from the principles of the present invention. Claim 1 is clearly patentable over Sakuyama because Sakuyama does not disclose superimposing additional data on the static status signal as is specifically recited in Claim 1. Claims 8 and 9 which depend from claim 1 are patentable for the same reasons as claim 1.

B. Claim 2 is patentable over Sakuyama because Sakuyama does not disclose the static status signal that carries additional superimposed data and because Sakuyama does not disclose a circuit that superimposes additional data on the static status signal.

In the final rejection, the Examiner rejected Claim 2 for similar reasons discussed above with respect to Claim 1. Claim 2 is dependent on claim 1 and is patentable for the same reasons discussed above in Section 7.II.A.

Claim 2 additionally recites that the electronic system includes a data providing circuit for receiving discrete data values representing data to be superimposed on the static signal and for providing said discrete data values serially to said modulating circuit. Sakuyama does not disclose such a circuit for providing serial data on a static status signal. Although Sakuyama discloses the provision of data through optical amplifier 102, there is no discussion or provision of that data to a static status signal or circuitry therefor. As discussed in Section 7.II.A above, Sakuyama removes data from the monitor signal, the opposite of including circuitry for injecting data onto the a static status signal. Accordingly, Claim 2 is additionally patentable over Sakuyama because Sakuyama does not disclose circuitry for providing the additional data on the static status signal.

C. Claim 10 is patentable over Sakuyama because Sakuyama fails to disclose superimposing data on a static status signal and because Sakuyama fails to disclose aggregating data.

As a preliminary matter, independent claim 10 is patentable for the same reasons discussed above in Section 7.II.A. That is, Sakuyama does not show the provision of a static status signal including superimposed data which is clearly recited in claim 10.

In addition, independent claim 10 recites a step of aggregating data from the electronic system. Appellant notes that the common and ordinary definition of "aggregated" is to collect or gather into a mass. Aggregating data is simply not disclosed in Sakuyama. At most, Sakuyama provides a system which monitors a main signal. However, the aggregation of data, much less

the transmission of that aggregated data on a static signal is not shown, described or suggested. It appears that Sakuyama is merely a repeating system in which data is simply passed on without aggregation. Accordingly, independent claim 10 is clearly patentable over Sakuyama because Sakuyama fails to disclose superimposing data on a static status signal and because Sakuyama fails to disclose aggregating data.

D. Claim 19 is patentable over Sakuyama because Sakuyama fails to disclose superimposing data on a static status signal and because Sakuyama fails to disclose that data on the static signal is indicative of information other than the operational condition of the static status signal.

As a preliminary matter, independent claim 19 is patentable for the same reasons discussed above in Section 7.II.A. That is, Sakuyama does not show the provision of a static status signal including superimposed data which is clearly recited in claim 19.

In addition, claim 19 recites that the data that is collected is indicative of information other than the operational condition associated with the static status signal. Assuming arguendo that the Examiner's analysis of the monitor signal is correct that the monitor signal is a static status signal including superimposed data, the monitor signal is not providing information which is indicative of information other than the operation condition. Indeed, the monitor signal is clearly relating information about the main signal itself and its operational condition. Superimposition of additional information is not shown, described or suggested in Sakuyama. Accordingly, claim 19 is patentable over Sakuyama because Sakuyama fails to disclose superimposing data on a static status signal and because Sakuyama fails to disclose providing data indicative of information other than the operational condition associated with the static status signal.

III. The Examiner's rejection of Claims 3-5, 13-15, 18 and 20-22 under 35 U.S.C. § 103 as being unpatentable over Sakuyama in view of the admitted prior art (APA) should be reversed because there is no suggestion to combine Sakuyama and APA, because Sakuyama teaches away from the present invention, and because the combination of

Sakuyama and APA still fail to disclose or suggest at least one element of claims 3-5, 13-15 and 20-22.

To establish a prima facia case of obviousness based on a combination of prior art references under 35 U.S.C. § 103(a), the Examiner must first show that there is a suggestion or motivation to combine the teachings of those references. This may come in the form of some of the objective teaching in the prior art or, alternatively, knowledge generally available to one of ordinary skill in the art at the time of the invention that would lead the individual to combine the relevant teachings of the references. When the motivation to combine teachings of references is not immediately apparent, it is the duty of the Examiner to explain why the combinations of the teachings is proper. Ex parte Skinner, 2 U.S.P.Q. 2d 1788 (Bd.Pat.App. and Int. 1986). In this case, the Examiner has not satisfied the burden of showing that one of ordinary skill in the art would have been motivated to combine the teachings of Sakuyama with APA.

As discussed above in Section 7.I.B to establish a prima facia case of obviousness of the claimed invention, all of the claim limitations must be taught or suggested by the prior art. In re Royka, 180 U.S.P.Q. 580 (CCPA 1974). Even if Sakuyama and APA could be properly combined, the combination of these references does not teach or suggest at least one element of Claims 3-5, 13-15, 18, and 20-22. Further, Sakuyama teaches away from the present invention. Obviousness is particularly difficult to establish when a reference teaches away from the invention. See In re Fine, 837 F.2d. 1071 (Fed. Cir. 1988).

A. Claim 3 is patentable over Sakuyama and APA because Sakuyama and APA fail to disclose superimposing data on a static status signal, because there is no suggestion to combine Sakuyama and APA, and because Sakuyama teaches away from the present invention.

As a preliminary matter, Claim 3 is dependent upon Claim 1 and is patentable for the same reasons discussed above in Section 7.II.A. Claim 3 specifically recites the use of the static status signal including superimposed data on an aircraft display system. Neither APA nor Sakuyama show, describe or suggest the provision of a static status signal including

superimposed data. Sakuyama does not show a static status signal for the same reasons discussed in Section 7.II.A. Similarly, APA does not disclose or suggest the superimposition of data on a static status signal.

In addition, Sakuyama and APA cannot be properly combined because there is no suggestion in Sakuyama or APA for such a combination. The Examiner claims that it would be obvious to utilize Sakuyama "to promote commonality and reduce cost." The Examiner's purported motivation does not provide any indication as to what in particular would cause one in the art to achieve the present invention in light of APA or Sakuyama . Sakuyama does not mention aircraft display systems. Similarly, APA does not mention anywhere the reproducing circuit of Sakuyama.

Further still, there is no discussion as to how one would insert the monitor signal of Sakuyama into an aircraft display system. There is no discussion as to how the monitor controls circuit would relate to static status signal used on the display terminals. Clearly, simply combining Sakuyama with APA would more likely result in a separate circuit for monitoring signals as they are transferred across the network, rather than receiving data about the display itself. Indeed, this hypothetical system would also achieve the Examiner's purported motivation of "commonality and reduced cost." This is a far cry from the invention recited in claim 3 and shows that the Examiner's combination is not proper.

In addition, it is clear that Sakuyama teaches away from the present invention. Sakuyama teaches that it is desirous to filter out any remnants of the main signal when generating a monitor signal. This is precisely the antithesis of the present invention. See Section 7.II.A. above. It is improper to combine references where references teach away from their combination. See, MPEP § 2145 (citing In re Graselli, 218 U.S.P.Q. 764 (Fed. Cir. 1982).

Appellant respectfully submits that the combination of Sakuyama and APA relied upon by the Examiner is based on improper hindsight reasoning, using the Appellant's own disclosure as a road map in an attempt to render the present claims obvious. Appellant respectfully requests reversal of the rejection of claim 3 over the combination of Sakuyama and APA, since the

Examiner has not satisfied the initial burden of showing that one of ordinary skill in the art at the time of the invention would have been motivated to combine the teachings of such references in the manner suggested by the Examiner.

In conclusion, Claim 3 is clearly patentable over Sakuyama and APA because Sakuyama and APA failed to disclose superimposing data on a static status signal, because Sakuyama and APA are not properly combined, and because Sakuyama teaches away from the present invention. Claim 4 which depends from claim 3 is patentable for the same reasons.

B. Claim 5 is patentable over Sakuyama and APA because Sakuyama and APA fail to disclose superimposing data on a static status signal, because Sakuyama and APA fail to disclose superimposing data on the 28 Volt Direct Current (VDC) logic signal, because there is no suggestion to combine Sakuyama and APA, and because Sakuyama teaches away from the present invention.

As a preliminary matter, dependent claim 5 is dependent upon claim 1 and recites the additional limitation that the static status signal is a 28 Volt Direct Current (VDC) logic signal. Claim 5 is patentable for the same reasons as discussed above in Section 7.III.A. Neither of APA nor Sakuyama show, describe or suggest the provision of a static status signal including superimposed data and the combination of APA and Sakuyama is improper.

In addition, there is no suggestion in APA or Sakuyama to use the 28 Volt Direct Current (VDC) logic signal as the static status signal. Given the myriad of different signals available in both Sakuyama and APA, it is unclear what would motivate one of ordinary skill in the art reading Sakuyama and APA to choose the particular 28 Volt Direct Current (VDC) logic signal. In fact, following the Examiner's interpretation of the teachings of Sakuyama, one of ordinary skill in the art would create a monitor line on the aircraft display system rather than choose the 28 Volt Direct Current (VDC) logic signal. Therefore, claim 5 is clearly patentable over Sakuyama and APA because Sakuyama and APA fail to disclose superimposing data on the 28 Volt Direct Current (VDC) logic signal, because there is no suggestion to combine Sakuyama and APA and because Sakuyama teaches away from the present invention.

C. Claim 13 is patentable over Sakuyama and APA because Sakuyama and APA fail to disclose superimposing data on a static status signal, because Sakuyama and APA fail to disclose the provision of aggregating data on the static status signal, because Sakuyama and APA fail to disclose aggregating the data from a commercial airline in-flight entertainment system, because there is no suggestion to combine Sakuyama and APA, and because Sakuyama teaches away from the present invention.

Claim 13 is dependent upon claim 10 and is patentable for the same reasons discussed above in Section 7.II.C. Neither APA nor Sakuyama, show, describe or suggest the provision of a static status signal, nor do Sakuyama and APA disclose the aggregation of such data. In addition, claim 13 is patentable for the same reasons as discussed in Section 7.III.A. Sakuyama and APA cannot be properly combined because there is no suggestion for such a combination and because Sakuyama teaches away from the prior art. Accordingly, claim 13 is clearly patentable over Sakuyama and APA because Sakuyama and APA fail to disclose superimposing data on a static status signal, because there is no suggestion to combine Sakuyama and APA, because Sakuyama and APA fail to disclose the provision of aggregating data on the static status signal and because Sakuyama teaches away from the present invention.

D. Claim 14 is patentable over Sakuyama and APA because Sakuyama and APA fail to disclose superimposing data on a static status signal, because Sakuyama and APA fail to disclose the provision of aggregating data on the static status signal, because there is no suggestion to combine Sakuyama and APA, and because Sakuyama teaches away from the present invention.

Claim 14 is dependent upon claim 10 and is patentable for the same reasons discussed above in Section 7.II.C. Neither APA nor Sakuyama, show, describe or suggest the provision of a static status signal, nor do Sakuyama and APA disclose the aggregation of such data. In addition, claim 14 is patentable for the same reasons as discussed in Section 7.III.A. Sakuyama and APA cannot be properly combined because there is no suggestion for such a combination and because Sakuyama teaches away from the prior art. Accordingly, claim 14 is clearly

patentable over Sakuyama and APA because Sakuyama and APA fail to disclose superimposing data on a static status signal, because there is no suggestion to combine Sakuyama and APA, because Sakuyama and APA fail to disclose the provision of aggregated data on the static status signal, and because Sakuyama teaches away from the present invention.

E. Claim 15 is patentable over Sakuyama and APA because Sakuyama and APA fail to disclose superimposing data on a status signal, because Sakuyama and APA fail to disclose coupling a varying data signal superimposed on a static status signal in an airline tapping unit, because Sakuyama and APA failed to disclose aggregating data for provision on the static status signal, because Sakuyama and APA are not properly combined and because Sakuyama teaches away from the present invention.

Dependent claim 15 is dependent upon claim 13 and recites an additional step of coupling the varying data signal to a receiving circuit, comprising coupling the varying data signal into a commercial airline tapping unit. Claim 15 and is patentable for the same reasons discussed above in Section 7.III.C.

In addition, Sakuyama and APA cannot be properly combined to provide a varying data signal into a commercial airline tapping unit. There is no indication that a commercial airline tapping unit would be utilized to couple the varying signal in Sakuyama and APA. Indeed, Sakuyama does not even mention commercial airliners, much less, a commercial airline tapping unit. Although APA discloses commercial airline tapping units, there is no indication as to how or why one would use the superimposed static status signal data in the commercial airline tapping unit. Indeed, Sakuyama, which is related to the provision of media access a central line would more likely use a separate monitor unit on aircraft bus 211 or near the transmitting end so that the monitor control circuit could adjust transmission in response to the monitor signal. Accordingly, there is no suggestion for the combination to achieve the invention as recited in claim 15. Therefore, claim 15 is clearly patentable over Sakuyama and APA because Sakuyama and APA fail to disclose coupling a varying data signal superimposed on a static status signal in an airline tapping unit, because Sakuyama and APA failed to disclose aggregating data for

provision on the static status signal, because Sakuyama and APA are not properly combined and because Sakuyama teaches away from the present invention.

F. Claim 18 is patentable over Sakuyama and APA because Sakuyama and APA fail to disclose superimposing data on the static status signal, because Sakuyama and APA fail to disclose aggregating data, because Sakuyama and APA fail to disclose providing varying data on a 28 Volt DC amplification circuit, because there is no suggestion to combine Sakuyama and APA, and because Sakuyama teaches away from the present invention.

As a preliminary matter, dependent claim 18 is dependent upon claim 10 and is patentable for the same reasons discussed above in Section 7.II.C. That is, neither APA nor Sakuyama show, describe or suggest the provision of the static status signal, including superimposed data or the aggregation of such data. In addition, Sakuyama and APA cannot properly be combined as discussed in Section 7.III.A.

In addition, Sakuyama and APA do not show, describe or suggest the coupling of a varying data signal into a 28 Volt amplication circuit. There is no suggestion in Sakuyama for providing a signal on a 28 Volt amplication circuit. The APA is silent about varying signals on such a circuit Therefore, claim 18 is patentable over Sakuyama and APA because Sakuyama and APA fail to disclose superimposing data because Sakuyama and APA fail to disclose aggregating data, because Sakuyama and APA fail to disclose providing varying data on a 28 Volt DC amplification circuit, because there is no suggestion to combine Sakuyama and APA, because Sakuyama teaches away from the present invention.

G. Claim 20 is patentable over Sakuyama and APA because Sakuyama and APA fail to disclose superimposing data on a static status signal, because there is no suggestion to combine Sakuyama and APA and because Sakuyama teaches away from the present invention.

Dependent claim 20 depends from claim 19 and is patentable for the same reasons discussed above in Section 7.III.A. Claim 20 recites that the modulation circuit is in a display unit of an in flight entertainment system. Locating the modulation circuit in display unit is not shown, described or suggested in Sakuyama and APA. Claim 20 is patentable over Sakuyama and APA, because Sakuyama and APA are not properly combined, because Sakuyama and APA fail to disclose superimposing data on a static status signal, because Sakuyama and APA are not properly combined, and because Sakuyama teaches away from the present invention. Claim 21 is dependent on claim 20 and is patentable for the same reasons.

H. Claim 22 is patentable over Sakuyama and APA because Sakuyama and APA fail to disclose superimposing data on a static status signal, because Sakuyama and APA fail to disclose the use of an airline tapping unit for the superimposed data, because there is no suggestion to combine Sakuyama and APA, and because Sakuyama teaches away from the present invention.

Claim 22 is dependent upon claim 20 and recites an additional limitation wherein the second electronic subsystem is a commercial airline tapping unit. As a preliminary matter, Claim 22 is patentable for the same reasons discussed above in Sections 7.III.A. and 7.III.D.

In addition, Sakuyama and APA do not provide a suggestion for the use of the tapping unit for the superimposed data. Although APA discloses a tapping unit, motivation to include the superimposed data in the tapping unit is not suggested either by APA or Sakuyama. As discussed above in Section 7.III.E, Sakuyama would not place its system in such a unit, but rather would be placed on the main bus line or near the transmitting end so that the main signal could be adjusted in accordance with the monitor signal. Accordingly, claim 22 is clearly patentable over Sakuyama and APA because Sakuyama and APA fail to disclose the use of an airline tapping unit for the superimposed data, because Sakuyama and APA are not properly combined, and because Sakuyama teaches away from the present invention.

IV. The Examiner's rejection of Claims 6, 16, 17, 23, 25 and 26 under 35 U.S.C. § 103 as being unpatentable over APA in view of Sakuyama should be reversed because

there is no suggestion to combine Sakuyama and APA, because Sakuyama teaches away from the present invention, and because the combination of Sakuyama and APA still fail to disclose or suggest at least one element of claims.

In the Final Office Action, the Examiner combined APA and Sakuyama to reject claims 6, 16-17, 23 and 25-26. The Examiners stated it would have been obvious to utilize the AIRINC 722 connectors of APA with the method of Sakuyama "to retrieve input signal without being interfered by noise." As discussed above in Section 7.III.A, the combination of the APA with Sakuyama is not proper because there is no suggestion to combine and because Sakuyama teaches away from the present invention.

The Examiner's comments with respect to the rejection of claims 6, 16-17, 23 and 25-26 do not overcome Appellant's arguments in Section 7.III.A. Indeed, the Examiner's purported motivation is so general (prevention of noise) that it is impossible to understand exactly how the APA should be modified in accordance with Sakuyama to achieve the results of less noise interference. This is especially true since the APA does not even utilize the monitor signal of Sakuyama and therefore would not be concerned about noise with respect to that signal.

In addition, independent claims 25 and 26 are patentable for the same reasons discussed in Section 7.III.B. and 7.III.E. Claim 26 is also patentable because it recites the use of a plurality of tapping units and status reporting units. Clearly, Sakuyama only discloses a system utilizing one monitoring unit.

Accordingly, claims 6, 16, 17, 23, 25 and 26 are patentable because there is no suggestion to combine Sakuyama and APA, because Sakuyama teaches away from the present invention, and because the combination of Sakuyama and APA still fail to disclose or suggest at least one element of claims.

Conclusion

In view of the foregoing, the Appellant submits that Claims 1-2, 8-10 and 14 are not properly rejected under 35 U.S.C. § 102(a) as being anticipated by U.S. Patent No. 5,729,373 to Sakuyama and are therefore patentable. Claims 3-5, 13-15, 18 and 20-22 are not properly rejected under 35 U.S.C. § 103(a) over Sakuyama in view of Admitted Prior Art (APA) and are therefore patentable. Claims 6, 16-17, 23, 25-26 are not properly rejected under 35 U.S.C. § 103 over APA in view of Sakuyama and are therefore patentable. Claims 7, 11, 12, and 24 are already allowed. Accordingly, Appellant respectfully requests that the Board reverse all claim rejections and indicate that a notice of allowance respecting all pending claims should be issued.

Summary

For the foregoing reasons, it is submitted that the Examiner's rejections are erroneous, and reversal of the applied rejections is respectfully requested.

Respectfully submitted,

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APPENDIX OF THE PENDING CLAIMS

Listing of Claims:

1. (Previously Presented) An apparatus for providing data superimposed on a static signal, the apparatus comprising:

an electronic system for providing data to be superimposed on the static signal, the static signal being a status signal indicating an operational condition, the static signal being a fixed first voltage level to indicate a first status and a second fixed voltage level to indicate a second status;

a modulating circuit connected to said electronic system for receiving said data,

said modulating circuit for providing the static signal unaltered when the modulating circuit is not receiving data to be superimposed on the static signal, and for producing deviations in the static signal dependent on said data received from the electronic system.

2. (Original) The apparatus of claim 1, wherein said electronic system comprises a data providing circuit for receiving discrete data values representing data to be superimposed on the static signal and for providing said discrete data values serially to said modulating circuit, said modulating circuit producing deviations of the static signal dependent on said discrete data values serially received from said data providing circuit.

3. (Original) An apparatus as in claim 1 wherein the electronic system comprises a commercial airline display unit.

4. (Original) An apparatus as in claim 3 wherein the commercial airline display unit comprises a liquid crystal display (LCD) unit.

5. (Original) An apparatus as in claim 1 wherein the static signal is a 28 Volt Direct Current (VDC) logic signal.

6. (Previously Presented) An apparatus for providing data superimposed on a static signal, the apparatus comprising:

an electronic system for providing data to be superimposed on the static signal;

a modulating circuit connected to said electronic system for receiving said data,

said modulating circuit for providing the static signal unaltered when the modulating circuit is not receiving data to be superimposed on the static signal, and for producing deviations in the static signal dependant on said data received from the electronic system, wherein the static signal is a 28 Volt Direct Current (VDC) logic signal, wherein the 28 VDC logic signal is the "on indicator" signal on pin 8 of an ARINC 722 connector.

7. (Previously Presented) An apparatus for providing data superimposed on a static signal, the apparatus comprising:

an electronic system for providing data to be superimposed on the static signal;

a modulating circuit connected to said electronic system for receiving said data,

said modulating circuit for providing the static signal unaltered when the modulating circuit is not receiving data to be superimposed on the static signal, and for producing deviations in the static signal dependant on said data received from the electronic system, wherein said electronic system comprises a data providing circuit for receiving discrete data values representing data to be superimposed on the static signal and for providing said discrete data values serially to said modulating circuit, said modulating circuit producing deviations of the static signal dependent on said discrete data values serially received from said data providing circuit, wherein said data providing circuit comprises a shift register having parallel inputs for receiving said discrete data values.

8. (Original) An apparatus as in claim 1 wherein the modulating circuit produces a deviation that does not change the logical value of the static signal.

9. (Original) An apparatus as in claim 8 wherein the modulating circuit produces an approximately 5 volt deviation.

10. (Previously Presented) A method of collecting data from an electronic system by superimposing data upon a static signal, the method comprising the steps of:

aggregating the data from the electronic system;

modulating the static signal according to the aggregated data to produce a varying data signal superimposed on the static signal, the static signal being a status signal indicating an operational condition, the static signal being a fixed first voltage level to indicate a first status and a second fixed voltage level to indicate a second status;

coupling the varying data signal to a receiving circuit; and

recovering the varying data signal in the receiving circuit to obtain the aggregated data.

11. (Previously Presented) A method of collecting data from an electronic system by superimposing data upon a static signal, the method comprising the steps of:

aggregating the data from the electronic system;

modulating the static signal according to the aggregated data to produce a varying data signal superimposed on the static signal;

coupling the varying data signal to a receiving circuit; and

recovering the varying data signal in the receiving circuit to obtain the aggregated data, wherein the step of aggregating the data from the electronic system comprises coupling the data to inputs of a shift register and clocking said shift register to serially shift said data out of the shift register.

12. (Original) A method as in claim 11 wherein the step of coupling the data comprises applying a clocking signal to the shift register and providing the output of the shift register to modulate the static signal.

13. (Original) A method as in claim 10 wherein the step of aggregating the data from the electronic system comprises aggregating the data from a commercial airline in-flight-entertainment display system.

14. (Original) A method as in claim 10 wherein the step of aggregating the data from a commercial airline in-flight-entertainment display system comprises aggregating the data from a commercial airline in-flight-entertainment Liquid Crystal Display (LCD) system.

15. (Original) A method as in claim 13 wherein the step of coupling the varying data signal to a receiving circuit comprises coupling the varying data signal into a commercial airline tapping unit.

16. (Previously Presented) A method of collecting data from an electronic system by superimposing data upon a static signal, the method comprising the steps of:

aggregating the data from the electronic system;

modulating the static signal according to the aggregated data to produce a varying data signal superimposed on the static signal;

coupling the varying data signal to a receiving circuit; and

recovering the varying data signal in the receiving circuit to obtain the aggregated data, wherein the step of coupling the varying data static signal superimposed to a receiving circuit comprises coupling the varying data static signal into a 28 volt "on indicator" on pin 8 of an ARINC 722 connector of a commercial airline in-flight-entertainment display unit.

17. (Previously Presented) A method of collecting data from an electronic system by superimposing data upon a static signal, the method comprising the steps of:

aggregating the data from the electronic system;

modulating the static signal according to the aggregated data to produce a varying data signal superimposed on the static signal;

coupling the varying data signal to a receiving circuit; and

recovering the varying data signal in the receiving circuit to obtain the aggregated data, wherein the step of modulating the static signal according to the aggregated data to produce a varying data signal superimposed on the static signal comprises producing deviations on a 28-volt "on indicator" signal on pin 8 of an ARINC 722 connector.

18. (Original) A method as in claim 10 wherein the step of modulating the static signal according to the aggregated data to produce a varying data signal superimposed on the static signal comprises coupling the data serially into a 28-volt amplification circuit.

19. (Previously Presented) An electronic system for collecting data from a first electronic subsystem using a static signal, said data indicative of information other than an operational condition, the electronic system comprising:

a modulation circuit connected to receive data from said first electronic subsystem for superimposing said data on said static signal, the static signal being a status signal indicating the operational condition, the static signal being a fixed first voltage level to indicate a first status and a second fixed voltage level to indicate a second status;

a second electronic subsystem for receiving the static signal from the modulation circuit electronic subsystem, and

a circuit for retrieving the superimposed data from the static signal.

20. (Original) A system as in claim 19 wherein the electronic system comprises a commercial airline in-flight entertainment system and the first electronic subsystem is a system display unit of the in-flight entertainment system.

21. (Original) A system as in claim 20 wherein the in-flight-entertainment system display unit comprises an LCD display unit.

22. (Original) A system as in claim 20 wherein the second electronic subsystem is a commercial airline tapping unit.

23. (Previously Presented) An electronic system for collecting data from a first electronic subsystem using a static signal, said static signal indicative of the state of the first electronic subsystem, said data indicative of information other than said state, the electronic system comprising:

a modulation circuit connected to receive data from said first electronic subsystem for superimposing said data on said static signal;

a second electronic subsystem for receiving the static signal from the modulation circuit, and

a circuit for retrieving the superimposed data from the static signal, wherein the electronic system comprises a commercial airline in-flight entertainment system and the first electronic subsystem is a system display unit of the in-flight entertainment system, wherein the circuit for retrieving the data superimposed upon the static signal comprises a comparator.

24. (Previously Presented) An electronic system for collecting data from a first electronic subsystem using a static signal, said static signal indicative of the state of the first electronic subsystem, said data indicative of information other than said state, the electronic system comprising:

a modulation circuit connected to receive data from said first electronic subsystem for superimposing said data on said static signal;

a second electronic subsystem for receiving the static signal from the modulation circuit electronic subsystem, and

a circuit for retrieving the superimposed data from the static signal, wherein the electronic system comprises a commercial airline in-flight entertainment system and the first electronic subsystem is a system display unit of the in-flight entertainment system, wherein the circuit for retrieving the data superimposed upon the static signal comprises an optocoupler.

25. (Original) A status monitoring system for a display in an in-flight-entertainment system in an aircraft comprising:

a display unit operative for providing a video display to aircraft passengers and for providing a plurality of status signals;

a status reporting circuit incorporated within or coupled to said display unit for receiving said plurality of status signals;

a system control unit connected to an aircraft bus for communicating commands to said display unit;

a tapping unit coupled to said aircraft bus between said system control unit and the status reporting circuit, said tapping unit coupled to said status reporting circuit through an ARINC 722 connector;

said status reporting circuit transmitting said plurality of status signals to said system control unit via said tapping unit; and

said status reporting circuit connected for transmitting said plurality of status signals to said tapping unit along pin 8 of said ARINC 722 connector; said plurality of status signals superimposed on a static display-on indicator.

26. (Original) A status monitoring system for a display in an in-flight-entertainment system in an aircraft comprising:

a plurality of display units, each operative for providing a video display to at least one aircraft passenger and for providing a plurality of status signals corresponding to each display unit;

a status reporting circuit incorporated within or coupled to each of said plurality of display unit for receiving said plurality of status signals;

a system control unit connected to an aircraft bus for communicating commands to said plurality of display units;

a plurality of tapping unit coupled to said aircraft bus between said system control unit and the status reporting circuits, said plurality of tapping unit coupled to said status reporting circuits through a corresponding plurality of ARINC 722 connectors;

said status reporting circuits transmitting said plurality of status signals to said system control unit via said plurality of tapping unit; and

said status reporting circuits connected for transmitting said plurality of status signals to said plurality of tapping unit along pin 8 of said ARINC 722 connectors; said plurality of status signals superimposed on a static display-on indicator.